

Client ref: 88036/2001-2-19
Our File: 0178-5019USF/ycchen/nelson

What is claimed is:

- ~~Sub 1~~
1. An optical recording medium for recording and retrieving information with an optical beam comprising:
 - 3 a substrate;
 - 4 a transparent layer disposed on the substrate; and
 - 5 a reflecting layer optically reactive with the
 - 6 transparent layer disposed on the transparent layer.
 2. The optical recording medium of claim 1, further including a semi-transparent reflective area formed near the interface of transparent layer and reflecting layer after the optical recording medium is exposed to the optical beam.
 3. The optical recording medium of claim 2, wherein the semi-transparent reflective area is an alloy/compound of the transparent layer and the reflective layer.
 - ~~Sub 2~~
4. The optical recording medium of claim 2, wherein the semi-transparent reflective area distorts optical constants (n & k) and thereby alters the overall reflective intensity.
 5. The optical recording medium of claim 2, wherein the semi-transparent reflective area reduces the effective thickness of the transparent layer and changes the optical path of the incident and reflected light from the optical beam, thereby shifting constructive or destructive interference and altering the reflective intensity.
 6. The optical recording medium of claim 2, wherein the semi-transparent reflective area transforms the

3 polarization angle and thereby alters the reflective
4 intensity.

1 7. The optical recording medium of claim 1, wherein the
2 transparent layer has a thickness ranging from 5 to 500 nm.

1 8. The optical recording medium of claim 1, wherein the
2 transparent layer comprises of a material selected from the
3 group consisting of Si, Ge, GaP, InP, GaAs, InAs, GaSb,
4 InSb, In-Sn oxide, tin oxide, indium oxide, zinc oxide,
5 titanium oxide, Sb-Sn oxide, or combinations thereof.

1 9. The optical recording medium of claim 1, wherein the
2 reflecting layer has a thickness ranging from 1 to 500 nm.

1 10. The optical recording medium of claim 1, wherein the
2 reflecting layer comprises a material selected from the
3 group consisting of Ag, Al, Au, Pt, Cu, In, Sn, W, Ir, Re,
4 Rh, Ta, and their alloys, or combinations thereof.

1 11. The optical recording medium of claim 1, further
2 comprising a thermal-manipulating layer between the
3 substrate and the transparent layer.

1 12. The optical recording medium of claim 1, further
2 comprising a protective layer disposed on the reflecting
3 layer.

1 13. The optical recording medium of claim 12, further
2 comprising a thermal-manipulating layer between the
3 reflecting layer and the protective layer.

14. The optical recording medium of claim 2, wherein the semi-transparent reflective area is more reflective than the reflecting layer.

15. The optical recording medium of claim 2, wherein the semi-transparent reflective area is less reflective than the reflecting layer.

16. A method of optically recording information on an optical recording medium comprising a substrate, a transparent layer disposed on the substrate, and a reflecting layer optically reactive with the transparent layer disposed on the transparent layer, which comprises irradiating the transparent layer and reflecting layer with an optical beam to form a semi-transparent reflective area therebetween.

17. The method as claimed in claim 16, wherein the semi-transparent reflective area is an alloy/compound of the transparent layer and the reflective layer.

18. The method as claimed in claim 16, wherein the semi-transparent reflective area distorts optical constants (n & k) and thereby alters the overall reflective intensity.

19. The method as claimed in claim 16, wherein the semi-transparent reflective area reduces the effective thickness of the transparent layer and changes the optical-path of the incident and reflected light from the optical beam, thereby shifting constructive or destructive interference and altering the reflective intensity.

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1 20. The method as claimed in claim 16, wherein the semi-
2 transparent reflective area transforms the polarization
3 angle and thereby alters the reflective intensity.

1 21. The method as claimed in claim 16, wherein the
2 transparent layer has a thickness ranging from 5 to 500 nm.

1 22. The method as claimed in claim 16, wherein the
2 transparent layer comprises of a material selected from the
3 group consisting of Si, Ge, GaP, InP, GaAs, InAs, GaSb,
4 InSb, In-Sn oxide, tin oxide, indium oxide, zinc oxide,
5 titanium oxide, Sb-Sn oxide, or combinations thereof.

1 23. The method as claimed in claim 16, wherein the
2 reflecting layer has a thickness ranging from 1 to 500 nm.

1 24. The method as claimed in claim 16, wherein the
2 reflecting layer comprises a material selected from the
3 group consisting of Ag, Al, Au, Pt, Cu, In, Sn, W, Ir, Re,
4 Rh, Ta, and their alloys, or combinations thereof.

1 25. The method as claimed in claim 16, wherein the semi-
2 transparent reflective area is more reflective than the
3 reflecting layer.

1 26. The method as claimed in claim 16, wherein the semi-
2 transparent reflective area is less reflective than the
3 reflecting layer.

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